Amendments to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A network for implementing localized roaming of mobile subscribers, comprising: Base Transceiver Station BTS, Base Station Controller BSC, Mobile Switching Center MSC, Visiting Location Register VLR and Home Location Register HLR; wherein further comprises at least a Roaming Number Manager RNM;

said Roaming Number Manager, connected with the HLR, is used to manage mobile phone numbers in the home region and the contracted roaming region; said RNM takes the collection of obtained mobile phone numbers in the contracted roaming regions as a resource pool, and allocates the mobile phone numbers in the contracted roaming region to roaming subscribers dynamically.

2. (original) A network for implementing localized roaming of mobile subscribers according to claim 1, wherein said Roaming Number Manager RNM is embedded in said Home Location Register HLR.

3. (currently amended) A method for implementing localized roaming of mobile subscribers based on the network of claim 1, comprising:

a. configuring the RNM with local mobile phone numbers in contracted roaming region/network, an independent PSTN/ISDN (Public Switched Telephone Network/Integrated Service Digital Network) number and a signaling point code;

b. configuring data in the entities of the contracted roaming

region/network and that of the home network, so that the subscriber location inquiry message taking the local number in the subscriber's roaming region/network as the destination address will be directed to RNM in the subscriber's home network;

c. establishing interfaces between the RNM and entities of the contracted roaming region/network as well as between the RNM and entities of the home network; and

d. the subscriber utilizing the configuration in respective entities of the contracted roaming region/network and the home network to develop communication services in the roaming region/network, implementing localized roaming of the subscriber.

4. (original) A method for implementing localized roaming of mobile subscribers according to claim 3, wherein said step c comprises:

c1. establishing an interface between RNM and MSC;

c2. establishing an interface between RNM and HLR.

5. (currently amended) `A method for implementing localized roaming of mobile subscribers according to claim 3, wherein said step d comprises a subscriber location update process:

d1. the Visiting Location Register VLR at which the subscriber is registered currently sends a location update request to the HLR in the subscriber's home region;

d2. according to the location update request received from the VLR and the subscriber's current location, the HLR in the subscriber's home region addressing the RNM corresponding to the subscriber's current location through the RNM's PSTN/ISDN number and informing RNM of the subscriber location update;

d3. the RNM allocating a mobile phone number, i.e., a local

mobile phone number in the roaming region/network, to the subscriber, and returning said number in the roaming region/network to the HLR in the home region; and

d4. the HLR in the subscriber's home region inserting said local mobile phone number in the roaming region/network in the VLR at which the subscriber is registered currently, and returning an acknowledgement message of obtaining said number in the roaming region/network to RNM.

6. (original) A method for implementing localized roaming of mobile subscribers according to claim 5, wherein in step d3, before allocating a mobile phone number to the subscriber, the RNM determines whether the roaming region where the subscriber's mobile phone is roaming is a contracted roaming region; if so, RNM allocates one from the available numbers in the contracted roaming region and feeds it back to HLR in the home region; otherwise RNM feeds the subscriber's number in the original home region to HLR in the home region.

7. (original) A method for implementing localized roaming of mobile subscribers according to claim 6, wherein said method also comprises: when receiving an incoming call or initiating an outgoing call, the subscriber's mobile phone processes the call utilizing the number fed back from RNM in the subscriber's home region.

8. (original) A method for implementing localized roaming of mobile subscribers according to claim 5, wherein in step d2, the subscriber is informed of the allocated number by voice, short message or Unstructured Supplementary Service Data (USSD).

9. (currently amended) A method for implementing localized

roaming of mobile subscribers according to claim 7, wherein the call is processed utilizing the number fed back from RNM in the subscriber's home region in the following manner: when serving as the caller, the subscriber's mobile phone uses the number fed back from the RNM in the subscriber's home region to initiate a call; when the subscriber's mobile phone serves as the called, if the called number is the mobile phone number in subscriber's home region, MSC in the subscriber's home region inquires HLR in the subscriber's home region for the calling route, HLR finds the corresponding subscriber record, obtains address of VLR where the subscriber is roaming, and accesses said VLR to obtain routing information, with which HLR instructs MSC in the subscriber's home region to establish a calling route; if the called number is a local mobile phone number in a roaming region, MSC in the subscriber's roaming region inquires RNM for the calling route, RNM finds the subscriber identifier, then inquires the subscriber's HLR for calling route with the subscriber's identifier, and forwards the routing information returned form HLR to MSC in the subscriber's roaming region. the Mobile Switching Center (MSC) in the subscriber's roaming region or the MSC in the subscriber's home region inquires for the call route in Home Location Register (HLR) in the subscriber's home region; the Home Location Register (HLR) in the subscriber's home region inquires for the subscriber corresponding to the called number in the Roaming Number Manager (RNM) in the subscriber's home region, to find corresponding subscriber record, and to obtain the address of Visiting Location Register (VLR) corresponding to the subscriber's roaming, and then accesses said VLR to obtain routing information

~~to instruct the Mobile Switching Center (MSC) in the subscriber's~~
~~roaming region to establish the call.~~

10. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 5~~, 6, 7, 8 or 9,~~ wherein said method also comprises: when the subscriber's mobile phone leaves the contracted roaming region, the Home Location Register (HLR) in the subscriber's home region informs the Roaming Number Manager (RNM) in the subscriber's home region of the subscriber location update, the RNM in the subscriber's home region releases the mobile phone number, occupied by the subscriber, in the old roaming region, and breaks the mapping between the number and the subscriber.

11. (currently amended) A method for implementing localized roaming of mobile ~~phones~~ subscribers according to claim 10, wherein said method also comprises: binding the number in the contracted roaming region to a certain subscriber.

12. (original) The method for implementing localized roaming of mobile subscribers as in claim 5, wherein it is according to the subscriber's IMSI (International Mobile Subscriber identifier) that said VLR in step d1 addresses the HLR in the subscriber's home region.

13. (original) A method for implementing localized roaming of mobile subscribers according to claim 5, wherein the information carried in the location update request sent from VLR to HLR in step d1 and the parameters carried in the location update informed from HLR to RNM in step d2 comprise: the subscriber's IMSI and/or the mobile phone number in the home region, the subscriber's current location information and the subscriber's old location.

14. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 5 ~~or 12~~, wherein the subscriber location update process also comprises:

d5. the HLR in the home region ~~determining the RNM managing the subscriber's current location is not the one before subscriber location update;~~

~~d6.~~ informing the RNM <u>corresponding to the subscriber's old location</u> before subscriber location update ~~according to the subscriber's old location information~~; said information to RNM containing the subscriber's old location information;

~~d7~~<u>d6</u>. <u>if there is no binding relation between the subscriber and the local mobile phone number occupied by the subscriber, RNM releasing said local mobile phone number occupied by the subscriber; and</u> ~~the RNM before subscriber location update deleting the subscriber data, and sending a message to the HLR in the home region to acknowledge subscriber data deletion.~~

<u>d7. RNM sends a response to HLR in the home region.</u>

15. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 5 ~~or 12~~, wherein the subscriber location update process also comprises:

After receiving an acknowledgement for subscriber data insertion from VLR, HLR sending a message to the RNM in the region where the subscriber stays currently to acknowledge the number receipt.

16. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 5 ~~or 12~~, wherein the subscriber location update process also comprises: if not receiving the acknowledgement for number allocation from HLR, RNM

will release the allocated number.

17. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 3, wherein said step d comprises a process for calling the subscriber with the subscriber's number in roaming region/network; said process comprising the following steps:

d8. when the call is initiated with the called subscriber's number in the roaming region/network, a GMSC in the roaming region/network initiating a route inquiry to the RNM in the region where the subscriber stays currently;

d9. after receiving the inquiry request, RNM inquiring for the subscriber information according to the number in the roaming region, and inquiring HLR in home region for the calling route with the subscriber's identifier;

d10. the HLR in the home region returning the inquiry result to RNM, which sends an acknowledgement for route inquiry to the GMSC and instructing the GMSC to establish the route with the number obtained from HLR.

18. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 3, wherein said step d also comprises a process for calling the subscriber with the subscriber's number in the home network; said process comprising the following steps:

d11. when the call is initiated with the called subscriber's number in the home network, a GMSC in the home region inquiring for the route in the HLR in the subscriber's home region;

d12. after receiving the inquiry request, the HLR in the home region[[,]] finding its VLR number according to the subscriber's

number in the home region/network, requesting the VLR at which the subscriber is registered to allocate a roaming number;

d13. the VLR at which the subscriber is registered allocating a roaming number to the subscriber, and returning said number to the HLR;

d14. the HLR in the subscriber's home region sending an acknowledgement for route inquiry to the GMSC in the subscriber's home region, and instructing the GMSC to establish the route with the allocated roaming number.

19. (currently amended) A method for implementing localized roaming of mobile subscribers according to claim 3, wherein said step d also comprises a process of sending a short message to the subscriber's number in the roaming region/network; said process in detail comprising the following steps:

d15. the Short Message Service Center SC sending a short message to Short Message Service Gateway Mobile Switching Center SMS GMSC, which initiates a route inquiry to RNM;

d16. on receiving the inquiry request, RNM inquiring the subscriber information according to the number in the roaming region, and inquiring the HLR in subscriber's home region for the route with the subscriber's identifier;

d17. HLR returning the MSC number or the Service GPRS Supporting Node SGSN number where the subscriber stays currently to RNM;

d18. RNM sending an acknowledgement for route inquiry to SMS GMSC, to instruct the route for the short message with the MSC number or SGSN number obtained from HLR, and SMS GMSC issuing the short message.